

Dec. 18, 1928.

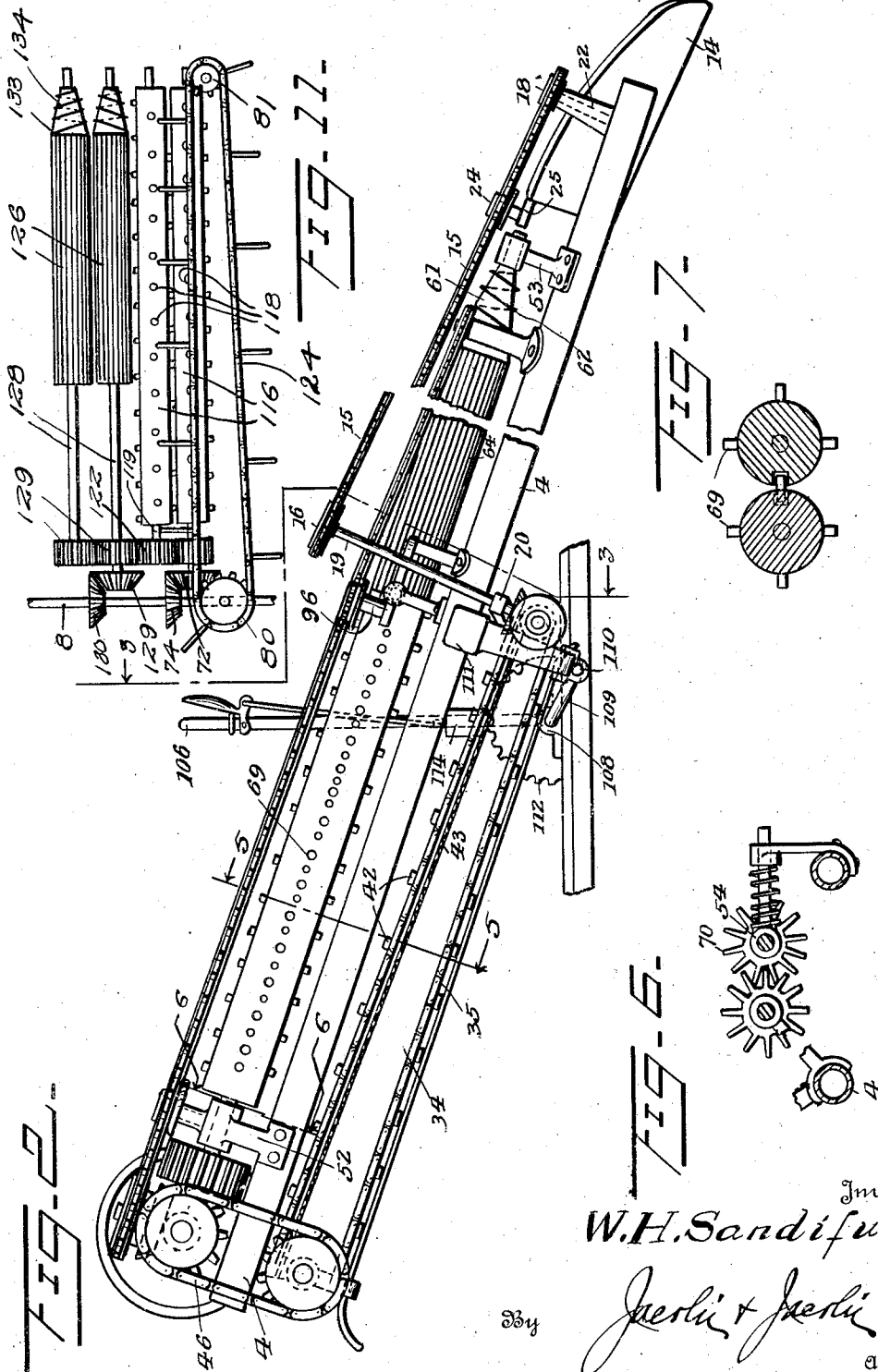
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W. H. SANDIFUR

CORN MACHINE

Filed June 25, 1924

3 Sheets-Sheet 2



Inventor
W.H. Sandifur,
Jesterli & Jesterli
Attorney*

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Fig. 3.

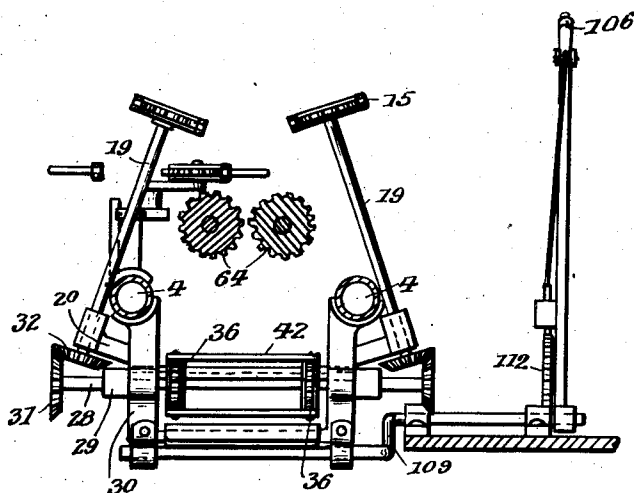


Fig. 4.

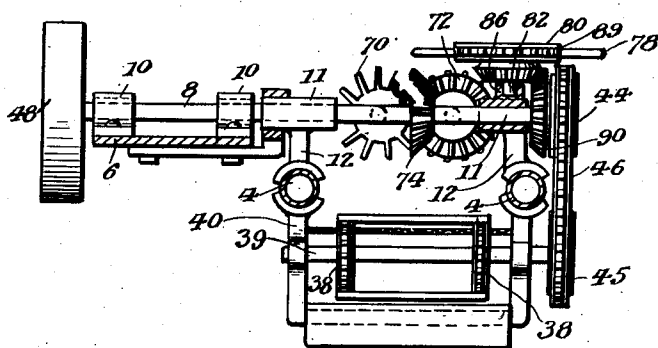
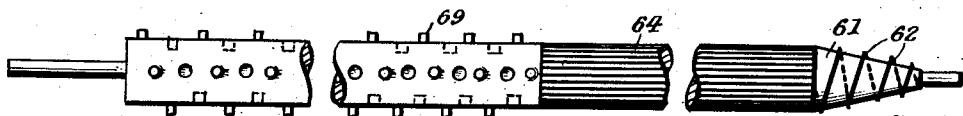


Fig. 5.



Inventor
W. H. Sandifur.

By *Jacobi & Jacobi*
Attorneys

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UNITED STATES PATENT OFFICE.

WILLIAM H. SANDIFUR, OF MEDARYVILLE, INDIANA.

CORN MACHINE.

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This invention relates to corn machines, and particularly to a machine for picking the ear of corn from the stalk and removing the husk, and among the many advantages and objects of the present machine may be mentioned the special arrangement and construction of the husking rolls, their manner of mounting and combined guide and carrier means for the individual ears of corn. Many additional objects will be apparent upon reference to the accompanying specification and drawings, in which

Figure 1 is a top plan view of the apparatus;

Figure 2 is a side elevation thereof;

Figure 3 is a vertical transverse section on the line 3—3 of Figure 2;

Figure 4 is a rear view of the device;

Figure 5 is a vertical transverse section on the line 5—5 of Figure 2;

Figure 6 is a sectional view on the line 6—6 of Figure 2;

Figure 7 is a sectional view through the husking portion of the rolls;

Figure 8 is a detail view showing the construction of one of the bearings for one of the husking rolls;

Figure 9 is an enlarged elevation of one of the husking and snapping rolls; and

Figure 10 is a vertical transverse section on the line 10—10 of Figure 1.

Figure 11 is a top plan view of a modified form of my apparatus.

Referring now more particularly to the drawings by numerals of reference, and at this time principally to Figures 1 and 2, numeral 4 designates the longitudinal or side members of the frame which support the mechanism to be described, said frame being mounted usually upon the side of a tractor, for example, of the Fordson type.

In the present embodiment, the rear end of the frame is supported upon a portion 6 of the tractor, through the medium of a transverse power or drive shaft 8 journaled in bearings 10 upon a suitable portion of the tractor frame, said drive shaft being further journaled on the frame of the attachment through bearings 11 formed on the upper ends of uprights 12 extending above the longitudinal side frame members as more clearly shown in Figure 4. It might be here stated that the longitudinal side frame members comprise metallic tubing of suitable weight and proportions.

At their forward ends, the side frame

members support a pair of divergent gathering arms 14 which guide or direct the stalks into the path of a pair of endless sprocket chains 15, each of which travels over a pair of sprocket wheels 16 and 18, the former of which are rigid upon the upper ends of upright drive shafts 19 journaled in brackets 20 on the frame construction, while the latter are journaled in brackets 22 on the forward ends of the side frame members. Idle or guide rollers 24, journaled suitably as at 25, are for the purpose of directing the chains in proper relation to the gathering arms, the chains being provided with gathering fingers 26.

The upright gathering-chain driving shafts 19 are simultaneously driven so that the inner legs travel in the same direction through the medium of a transverse shaft 28 journaled at 29 at approximately a point intermediate the ends of the frame in brackets 30 fixed to and depending from the side frame members 4, the ends of said shaft 28 being provided with bevel gears 31 which mesh with bevel gears 32 on the lower ends of the upright shafts 19.

Rotary motion to drive the upright shafts 19 is imparted to the transverse shaft 28 through the medium of an endless travelling chain carrier 34, which of itself comprises a pair of parallel spaced sprocket chains 35 travelling at their forward ends over a pair of sprocket wheels 36 fixed on the shaft 28, and at their rear ends over a pair of sprocket wheels 38 fixed on a secondary drive shaft 39 journaled in brackets 40 depending from the side frame members 4. At regularly spaced intervals, the chains carry a series of transverse slots 42 for carrying the trash over a wire mesh screen 43, suitably supported intermediate the upper and lower stretches of the endless chain carrier, and depositing it at the rear of the machine.

The outer ends of the main drive shaft 8 and secondary drive shaft 39 are, respectively, provided with a fixed sprocket wheel 44 and 45 and over these wheels travels a sprocket chain 46 whereby power is transmitted from main shaft 8 to shaft 39, when the former is driven when power is applied to pulley 48.

The corn snapping and husking operation is performed through the medium of a pair of rolls 50 and 51, which are arranged in parallel relation intermediate the side frame members and adapted to be driven in oppo-

site directions by mechanism to be presently described.

The roll 51 is journaled in fixed bearings 52 and 53 carried by one of the side frame members 4, while the roll 50 is journaled in yielding bearings 54 and 55 carried by the other side frame member 4. One of the bearings which are substantially identical in structure, is shown in Figure 6, and each comprises a bearing member having a lateral arm 56 slidable in a bracket 59 fixed on one of the side frame members 4, a compression coil spring 60 surrounding the arm 56 and interposed between the bearing and the bracket and thus urging the said roll 50 yielding toward roll 51.

The rolls 50 and 51 at their forward ends are conical in form as at 61, and provided each with a spiral flange 62 for the purpose of feeding the corn stalks from the carrying chains 15 to the snapping corrugated portions 64 of the rolls 50 and 51, and which snapping portions remove the ears of corn from the stalk and deliver them to the husking portions 65 and 66, said husking portions constituting the major portion of the rolls 50 and 51. The husking portion of each roll is provided with a plurality of longitudinal series of alternate pins 68 and apertures 69 arranged around each roll, the pins of one roll being adapted to register with the apertures of the other roll and vice-versa as the rolls rotate.

Each of the rolls is provided with a spur gear 70 which mesh to drive the rolls in opposite directions, one of the rolls as 51 being provided with a bevel gear 72 in mesh with a bevel gear 74 fixed on the main drive shaft 8.

As the ears of corn, indicated by the letter X in Figure 10 are snapped from the stalk by the snapping portions 64 of the rolls, they are caught by fingers 78 mounted on an endless carrier sprocket chain 79 which travels longitudinally of the rolls over sprocket wheels 80 and 81, respectively, the former being mounted to rotate on a vertical axis, on a stub-shaft 82 journaled in a bearing 86 formed on the outer of the bearings 11, the stub-shaft carrying a bevel gear 89 meshing with a similar gear 90 keyed on the main power shaft 8. The latter or forward sprocket wheel 81 is also mounted to rotate on a vertical axis, being journaled on a vertical shaft 91 on the side frame member 4.

The fingers 78 are arranged on the chain equal distances apart so that the space between any two fingers is approximately the length of an ear of corn.

The rear portion of the inner stretch of the carrier chain is guided over an idle sprocket 92, while the forward portion is guided over an idle sprocket wheel 93 journaled on a horizontally swinging arm 95, the inner end of which is pivoted on a

vertical arm 96 fixed on the side frame member 4, the arm being urged inwardly by a coiled compression spring 98. The purpose of this construction is to cushion the carrier chain so that, should the ears wedge, the spring 98 will permit the chain to yield and the fingers on the chain to pull back and slide around so that breakage is overcome.

Extending longitudinally of and arranged above the roll 51 is a board 99 secured to the outer of the side frame members 4, said board having a number of L-shaped brackets 100 to the free ends of which is secured a guide bar 101, more clearly shown in Figure 10, said bar 101 serving as a guide for the chain 79, the fingers 78 on which are upward extensions 102 which engage the inner face of said bar, while the chain in its travel rides on the upper face of the board 99. Opposed to but cooperating with the board 99 is a longitudinal inclined board 104 arranged over the roll 50 and covering, with the board 99, all that portion of the rolls except that which is to operate upon the ears of corn in removing the husks. Owing to the fact that the fingers 78 are supported upon the board 99 by the brackets 100 and the guide bar 101, the fingers 78 are of sufficient length to completely bridge the space between the rolls 50 and 51, as shown, and hence but one set of the fingers 78 is used.

For the purpose of elevating the forward portion of the machine, I provide a lever 106 journaled at 108 on the tractor, said lever having a crank arm 109 pivoted at 110 to a bracket 111 depending from the side frame member 4, the lever being locked in the desired position by the locking segment 112 with which cooperates the latch 114.

Referring now to the modified form of my apparatus as shown in Figure 11, which discloses a construction adaptable to the present machine, and falling within the scope of my invention, and wherein the principal portions of the apparatus as covered by the other figures are employed, husking rolls 116 having the same arrangement of pins 118 as in the other figures, are mounted on rotary shafts 119 journaled at their ends in bearings 120 and 121 and intergeared through the spur gearing 122, carrier chains 124 being also employed as and for the same purpose as the chain 79 in the other figures of the drawing.

The construction differs in the present modification from the structure first described in the arrangement of the snapping rollers 126, these being carried on rotary shafts 128 arranged in parallel relation with the husking rollers and being intergeared by gears 129 fast on the shafts 128. The shafts are driven through the medium of cooperating bevel gears 130 and 132 mounted respectively on one of the snapping roller shafts 130

128 and the power drive shaft 8. The forward ends of the snapping rollers are, as in the case of the first described construction, provided with conical gathering portions 133 provided with spiral flanges 134. Of course, in the present construction, it is necessary to transfer by some means, the corn after being snapped to the husking rollers for further action. It is, of course, further understood that one of the husking rollers as well as the carrier chain be yieldingly mounted as in the first described arrangement.

The operation of the various parts of the apparatus has been set forth throughout the specification so further description is deemed unnecessary and a thorough understanding obtained especially by those familiar with the art.

From the foregoing description of the construction of my improved apparatus, it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention, and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion, and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described my invention, what I claim as new is:—

1. A corn harvester comprising a frame, rolls journaled thereon, a panel board located above the rolls and disposed longi-

tudinally thereof, brackets mounted upon the panel boards, a guide bar carried by the bracket and having its lower edge spaced above the upper surface of the panel board, the guide bar being disposed in a plane at a right angle to the plane of the panel board, a chain mounted for movement upon the upper surface of the panel board, fingers carried at the side of the chain and resting directly upon the upper surface of the panel board, said fingers completely bridging the space between the upper surface of the panel board and the guide bar and said fingers passing through the space between the panel board and the guide bar.

2. A corn harvester comprising a frame, rolls journaled thereon, a panel board located above the rolls and disposed longitudinally thereof, brackets mounted upon the panel board, a guide bar carried by the bracket and having its lower edge spaced above the upper surface of the panel board, the guide bar being disposed in a plane at a right angle to the plane of the panel board, a chain resting directly upon the upper surface of the panel board, fingers carried at the side of the chain and resting directly upon the upper surface of the panel board and extending through the space between the panel board and the guide bar, said fingers having angularly disposed lugs which engage the inner surface of the guide bar and said fingers completely bridging the space between the panel board and the guide bar.

In testimony whereof I affix my signature.

WILLIAM H. SANDIFUR.